

## PATENT ABSTRACTS OF JAPAN

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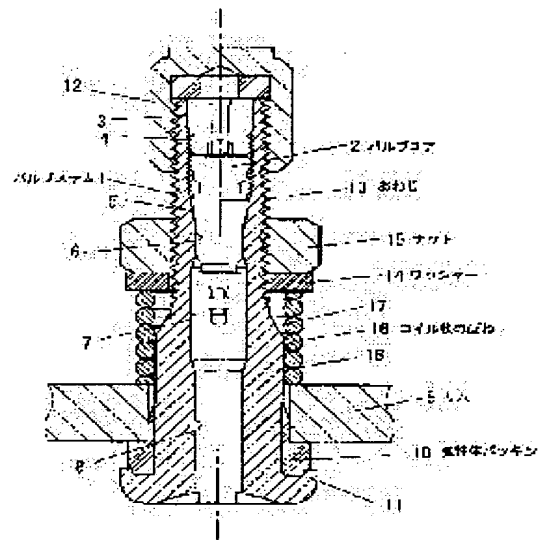
(72)Inventor : YAMAMOTO MASAHIKO  
KITAMURA KOJIRO

## (54) RIM VALVE

## (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a rim valve having excellent hermetic reliability, preventing a reduction in axial force acting on a valve stem 1, and being hard to be tilted, even when centrifugal force is applied thereon during high speed traveling.

**SOLUTION:** This rim valve is equipped with a washer 14 and nut 15 installed in order from an upper part of the valve stem 1 fitted in a rim 9 through an elastic packing 10, and assembled with the rim 9. A coiled spring 16 is provided between the washer 14 and the rim 9.



## LEGAL STATUS

[Date of request for examination]

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**CLAIMS**

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[Claim(s)]

[Claim 1] The rim bulb characterized by having equipped with the washer 14 and the nut 15 one by one, and forming the coil-like spring 16 between the aforementioned washer 14 and a rim 9 in the aforementioned rim 9 and the rim bulb attached from the upper part of the valve stem 1 inserted in the rim 9 through the packing 10 of an elastic body.

[Claim 2] The rim bulb according to claim 1 characterized by having been acceptable nut 15, having been acceptable valve-cap 12 with the screw thread, and making the path of a screw thread the same while extending and forming the male screw 13 of the external surface of the aforementioned valve stem 1 to the bolting position of a nut 15.

[Claim 3] The rim bulb according to claim 1 or 2 characterized by preparing cylinder-like color 14a in the aforementioned washer 14 inner-circumference space-under-the-porch side in one.

[Claim 4] The rim bulb according to claim 1 or 2 characterized by preparing cylinder-like covering 15a in the undersurface of the periphery edge of the aforementioned nut 15 in one outside, and covering the coil-like spring 16 by this covering 15a.

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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the rim bulb used for the tire of an automobile.

[0002]

[Description of the Prior Art] Drawing 4 shows drawing of longitudinal section of the conventional common rim bulb, and this rim bulb is constituted by combination with a valve stem 1, the elastic body packing 10, a washer 14, a nut 15, a valve core 2, and a cap 12. And the opening 6 of the shape of the straight-like opening 3, a female screw 4, the taper side 5, and a straight, the recess processing section 7, and the run through-hole 8 are formed in the inside of a valve stem 1 one by one from the upper part so that it can equip with a valve core 12. In addition, the run through-hole 8 is for being connected with the interior of the tire which is not illustrated and introducing the pneumatic pressure of a tire into a rim bulb.

[0003] Moreover, a male screw 13 is formed from the upper part, a male screw 21 is formed so that it can equip with a nut 15 below further, and the base section 11 which enables wearing of the elastic body packing 10 is formed in the soffit section so that the superficies of the aforementioned valve stem 1 can be equipped with a valve cap 12.

[0004] That is, from the upper part, it is equipped with a washer 14 and a nut 15 one by one, and the airtight between a rim 9 and a valve stem 1 is held by the aforementioned elastic body packing 10 by being attached to the rim 9 of a tire at the superficies side of the aforementioned d valve stem 1. Moreover, from the upper part, it is equipped with a valve core 2 and the airtight by the side of the inside of a valve stem 1 is held at the inside side of the aforementioned valve stem 1.

[0005]

[Problem(s) to be Solved by the Invention] In the conventional common rim bulb of drawing 4, a rim 9 is equipped by thread fastening of a nut 15, the elastic body packing 10 is compressed, and the airtight between a rim 9 and a valve stem 1 is held. However, for this reason, the axial tension which the so-called setting [ say / creep deformation or a compression set / tend to ease the stress and / in the passage of time ] occurred, and the elastic body packing 10 had required for the valve stem 1 by thread fastening of a nut 15 declines, and, as for a rim bulb, stress high to the elastic body packing 10 becomes easy to incline by external force. Therefore, especially, at the time of a high-speed run of 300 or more km/h, in order that a centrifugal force might act perpendicularly to the axis of a rim bulb, the rim bulb inclined, the crevice \*\*\*\*ed bored between a rim 9 and the elastic body packing 10, and there was a problem which an airtight leak generates.

[0006]

[Means for Solving the Problem] The fall of the axial tension concerning the valve stem 1 is prevented, a rim bulb cannot incline easily, and the purpose of this invention offers the rim bulb excellent in airtight reliability, even when a centrifugal force is applied by pushing elastic packing with a coil-like spring at the time of a high-speed run.

[0007] That is, from the upper part of the valve stem 1 inserted in the rim 9 through the packing

10 of an elastic body, the rim bulb concerning the 1st invention equips with a washer 14 and a nut 15 one by one, and is characterized by forming the coil-like spring 16 between the aforementioned washer 14 and a rim 9 in the aforementioned rim 9 and the rim bulb attached.

[0008] Moreover, the rim bulb concerning the 2nd invention is acceptable nut 15, and is a thing according to claim 1 characterized by having been acceptable and making the path of a screw thread the same valve-cap 12 with a screw thread while it extends and forms the male screw 13 of the superficies of the aforementioned valve stem 1 to the bolting position of a nut 15.

[0009] Moreover, the rim bulb concerning the 3rd invention is a thing according to claim 1 or 2 characterized by preparing cylinder-like color 14a in the aforementioned washer 14 inner-circumference space-under-the-porch side in one.

[0010] Furthermore, the rim bulb concerning the 4th invention is a thing according to claim 1 or 2 characterized by preparing cylinder-like covering 15a in the inferior surface of tongue of the periphery marginal part of the aforementioned nut 15 in one, and covering the coil-like spring 16 by this covering 15a.

[0011]

[Embodiments of the Invention] Hereafter, one example of this invention is explained based on drawing. Drawing 1 is drawing of longitudinal section of the rim bulb of this invention. In addition to the valve stem 1 of elegance, the elastic body packing 10, a washer 14, a nut 15, a valve core 2, and a cap 12, the rim bulb of this invention arranges the coil-like spring 16 between the aforementioned washer 14 and a rim 9 conventionally.

[0012] As for a valve stem 1, the airtight by the side of the inside of a valve stem 1 is held by forming the opening 6 of the shape of the straight-like opening 3, a female screw 4, the taper side 5, and a straight, the recess processing section 7, and the run through-hole 8 in the inside one by one, and equipping it with a valve core 2 from the upper part, conventionally like elegance, here. Moreover, while extending a male screw 13 to the bolting position of a nut 15 and being prepared, the taper side 17 which serves as guidance of the coil-like spring 16 under this male screw 13, and the straight section 18 are formed in the superficies of a valve stem 1. Therefore, the above is acceptable nut 15, it is acceptable valve-cap 12 with a screw thread, and, similarly the path of a screw thread has a size. Moreover, the base section 11 which enables wearing of the elastic body packing 10 is formed in the soffit section of a valve stem 1 conventionally like elegance.

[0013] Next, the attachment procedure of the rim bulb of this invention is explained. A valve stem 1 is inserted in the bulb hole of a rim 9 through the packing 10 of introduction and an elastic body. Next, from the upper part of this valve stem 1, it equips with the coil-like spring 16, a washer 14, and a nut 15 one by one, and attaches to the rim 9 of a tire. Thereby, the airtight between a rim 9 and a valve stem 1 is held by the aforementioned elastic body packing 10.

[0014] In the rim bulb of this invention mentioned above, by ~~\*\*\*\*~~ing and fastening a nut 15, the elastic body packing 10 is crushed and requires high stress for the elastic body packing 10. For this reason, the elasticity of this elastic packing 10 can be held by the elastic body packing 10 easing the stress, and setting occurring with the passage of time, and pushing the elastic packing 10 with the coil-like spring 16, although the axial tension concerning the valve stem 1 tends to decline, and the axial tension concerning the valve stem 1 is held, without falling.

[0015] Therefore, even if it is hard coming to incline by external force and a centrifugal force acts perpendicularly to the axis of a rim bulb at the time of a high-speed run of 300 or more km/h, a rim bulb does not incline and an airtight leak does not generate a rim bulb.

[0016] Drawing 2 is drawing of longitudinal section of the rim bulb in which other examples of this invention are shown. The rim bulb in this example prepares a cylinder-like color in a washer 14 inner-circumference space-under-the-porch side in one in the example of this invention shown in drawing 1. In this example, since color 14a of a washer 14 can avoid that a spring 16 inclines when it becomes guidance of a spring 16 and a rim bulb is attached, it can attach a rim bulb more certainly.

[0017] Drawing 3 is drawing of longitudinal section of the rim bulb in which other examples of this invention are shown. The rim bulb in this example prepares cylinder-like covering 15a in the undersurface of the periphery edge of a nut 15 in one in the example of this invention shown in

drawing 1 . In this example, since the external surface side of a spring 16 is covered when a rim bulb is attached, covering 15a of a nut 15 has performed protection against dust and waterproofing.

[0018]

[Effect of the Invention] As mentioned above, in the rim bulb of this invention, since the coil-like spring 16 holds elasticity even if a centrifugal force acts perpendicularly to the axis of a rim bulb at the time of a high-speed run, since the axial tension concerning the valve stem 1 does not decline, it can offer the rim bulb excellent in the airtight reliability to which a rim bulb does not incline.

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**TECHNICAL FIELD**

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PRIOR ART

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[Description of the Prior Art] Drawing 4 shows drawing of longitudinal section of the conventional common rim bulb, and this rim bulb is constituted by combination with a valve stem 1, the elastic body packing 10, a washer 14, a nut 15, a valve core 2, and a cap 12. And the opening 6 of the shape of the straight-like opening 3, a female screw 4, the taper side 5, and a straight, the recess processing section 7, and the run through-hole 8 are formed in the inside of a valve stem 1 one by one from the upper part so that it can equip with a valve core 12. In addition, the run through-hole 8 is for being connected with the interior of the tire which is not illustrated and introducing the pneumatic pressure of a tire into a rim bulb.

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[0004] That is, from the upper part, it is equipped with a washer 14 and a nut 15 one by one, and the airtight between a rim 9 and a valve stem 1 is held by the aforementioned elastic body packing 10 by being attached to the rim 9 of a tire at the superficies side of the aforementioned valve stem 1. Moreover, from the upper part, it is equipped with a valve core 2 and the airtight by the side of the inside of a valve stem 1 is held at the inside side of the aforementioned valve stem 1.

[0005]

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**EFFECT OF THE INVENTION**

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[Effect of the Invention] As mentioned above, in the rim bulb of this invention, since the coil-like spring 16 holds elasticity even if a centrifugal force acts perpendicularly to the axis of a rim bulb at the time of a high-speed run, since the axial tension concerning the valve stem 1 does not decline, it can offer the rim bulb excellent in the airtight reliability to which a rim bulb does not incline.

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**TECHNICAL PROBLEM**

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[Problem(s) to be Solved by the Invention] In the conventional common rim bulb of drawing 4 , a rim 9 is equipped by thread fastening of a nut 15, the elastic body packing 10 is compressed, and the airtight between a rim 9 and a valve stem 1 is held. However, for this reason, the axial tension which the so-called setting [ say / creep deformation or a compression set / tend to ease the stress and / in the passage of time ] occurred, and the elastic body packing 10 had required for the valve stem 1 by thread fastening of a nut 15 declines, and, as for a rim bulb, stress high to the elastic body packing 10 becomes easy to incline by external force. Therefore, especially, at the time of a high-speed run of 300 or more km/h, in order that a centrifugal force might act perpendicularly to the axis of a rim bulb, the rim bulb inclined, the crevice \*\*\*\*ed bored between a rim 9 and the elastic body packing 10, and there was a problem which an airtight leak generates.

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**MEANS**

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[0007] That is, from the upper part of the valve stem 1 inserted in the rim 9 through the packing 10 of an elastic body, the rim bulb concerning the 1st invention equips with a washer 14 and a nut 15 one by one, and is characterized by forming the coil-like spring 16 between the aforementioned washer 14 and a rim 9 in the aforementioned rim 9 and the rim bulb attached.

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[0015] Therefore, even if it is hard coming to incline by external force and a centrifugal force acts perpendicularly to the axis of a rim bulb at the time of a high-speed run of 300 or more km/h, a rim bulb does not incline and an airtight leak does not generate a rim bulb.

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**DESCRIPTION OF DRAWINGS**

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[Brief Description of the Drawings]

[Drawing 1] Drawing of longitudinal section of the rim bulb of this invention.

[Drawing 2] Drawing of longitudinal section of the rim bulb in which other examples of this invention are shown.

[Drawing 3] Drawing of longitudinal section of the rim bulb in which other examples of this invention are shown.

[Drawing 4] Drawing of longitudinal section of the conventional rim bulb.

[Description of Notations]

1 Valve Stem 2 Valve Core

3 Straight-like Opening 4 Female Screw

5 Taper Side 6 Straight-like Opening

7 Recess Processing Section 8 Run Through-hole

9 Rim 10 Elastic Body Packing

11 Base Section 12 Valve Cap

13 Male Screw 14 Washer

14a Color 15 Nut

15a Covering 16 Coil-like spring

17 Taper Side 18 Straight Section

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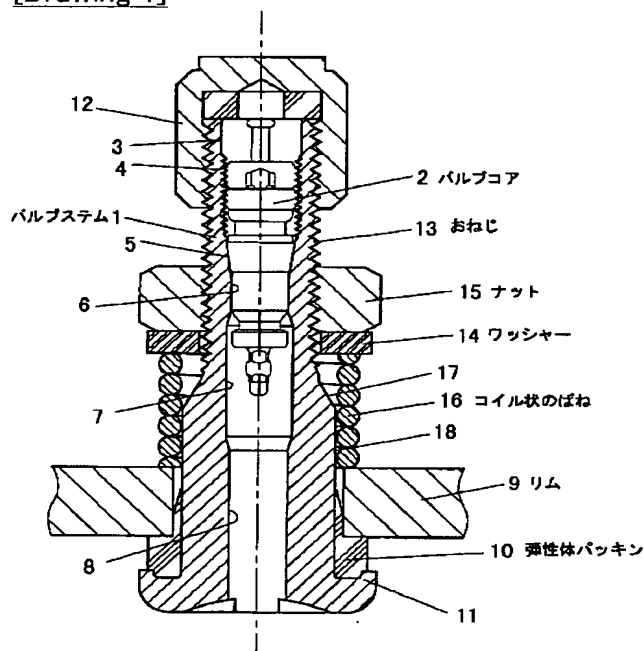
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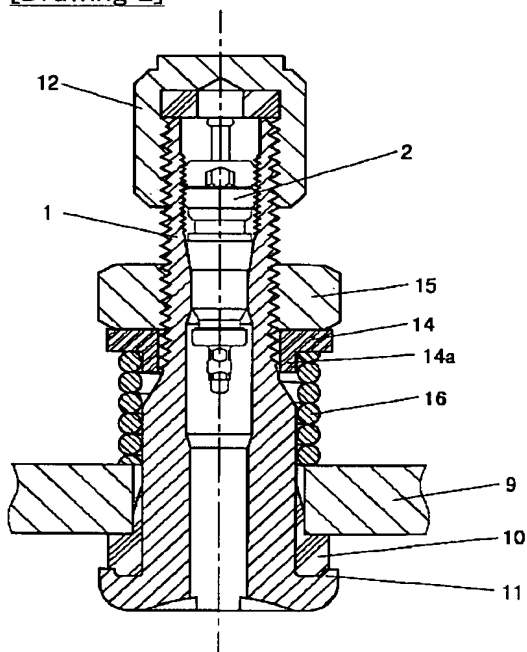
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## DRAWINGS

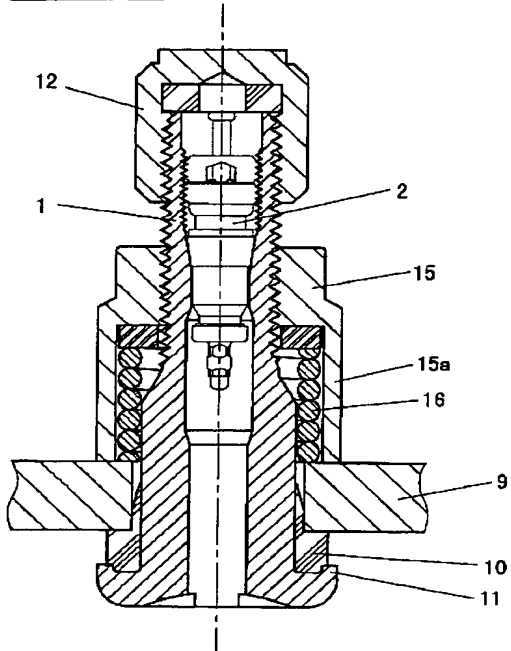
[Drawing 1]



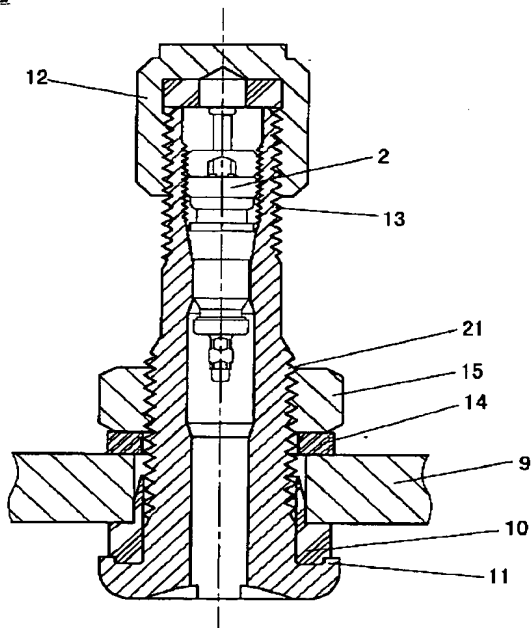
[Drawing 2]



[Drawing 3]



[Drawing 4]



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